

Date: Tuesday, 10/02/2009 11:09:15 AM  
 User: Julie Dawson

## Process Sheet

Customer	: CU-DAR001 Dart Helicopters Services	Drawing Name	: STUD
Job Number	: 45671		
Estimate Number	: 13146		
P.O. Number	:	Part Number	: D36883
This Issue	: 10/02/2009 S.O. No. :	Drawing Number	: D3688 REV B
Prsht Rev.	: NC	Project Number	: N/A
First Issue	: / / Type : MACHINED PARTS	Drawing Revision	: B
Previous Run	: 44824	Material	:
Written By	:	Due Date	: 28/02/2009 Qty: 10 Um: Each
Checked & Approved By	: <u>SWD 09-02-10</u>		
Comment	: Rev:A New Issue 08-01-29 JLM Verified By:EC : Est Rev:B Material Change 09-01-07 JLM Verified By:EC : Est Rev:C Added note on Step 2 09-01-26 JLM Verified By:EC		

## Additional Product

Job Number:



Seq. #:

Machine Or Operation:

Description :

1.0

M174PHH900R1000

17-4PH SS ROUND BAR 1.00 COND.900



Comment: Qty.: 0.8190 f(s)/Unit Total: 8.1900 f(s)  
 17-4PH SS ROUND BAR 1.00 \*\*\*CONDITION H900\*\*\*\*  
 BATCH: M110213

*09/03/04*

2.0

BAND SAW

BAND SAW



Comment: BAND SAW  
 \*\*\*DO NOT USE CHOP SAW\*\*\*  
 Cut blank 9.424" long

*09/03/04*

3.0

DOOSAN LATHE

DOOSAN LATHE



Comment: DOOSAN LATHE  
 1-Turn as per Folio FA717 Rev: 1/A & Dwg D3688 Rev: A

2-Deburr per dwg D3688

*09/03/04*

4.0

QC2

INSPECT PARTS AS THEY COME OFF MACHINE



Comment: INSPECT PARTS AS THEY COME OFF MACHINE

*09/03/04*

5.0

LATHE CONV.

CONVENTIONAL LATHE



Comment: CONVENTIONAL LATHE  
 Face to finished length as per dwg D3688 AND center drill as per Dwg D3688

*09/03/05*

(10)

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: D3688-3 PAR #: N/A Fault Category: Prod/Manufactured Def NCR: Yes No DQA: D Date: 01/03/20  
D3684-0471 D3685-041/0431  
 Resolution: Scrap Disposition: \_\_\_\_\_ QA: N/C Closed: D Date: 01/03/20

NCR: <u>45671</u>		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			
<u>01/03/05</u>	<u>7.0</u>	<u>1 part, the thread are too small.</u> <u>R.L. operator error</u>	<u>B</u> <u>01/03/05</u>	<u>scrap and destroy</u> <u>no replace.</u>	<u>mf.</u> <u>01/03/06</u>	<u>S</u> <u>01/03/06</u>	<u>B</u> <u>01/03/06</u>	<u>S</u> <u>01/03/06</u>

NOTE: Date & initial all entries

Date: Tuesday, 10/02/2009 11:09:15 AM

User: Julie Dawson

## Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: STUD

Job Number: 45671

Part Number: D36883

Job Number:



Seq. #:

Machine Or Operation:

Description :

6.0

QC2

INSPECT PARTS AS THEY COME OFF MACHINE



Comment: INSPECT PARTS AS THEY COME OFF MACHINE

*ml 09/03/05*

*10*

7.0

DOOSAN LATHE

DOOSAN LATHE



Comment: Doosan Lathe

1- Turn as per Folio FA717 Rev: *CHA* & Dwg D3688 Rev: *B*

2-Deburr per dwg D3688

*ml 09/03/05*

*(9)*

8.0

QC2

INSPECT PARTS AS THEY COME OFF MACHINE



Comment: INSPECT PARTS AS THEY COME OFF MACHINE

*ml 09/03/05*

*(9)*

9.0

QC8

SECOND CHECK



Comment: SECOND CHECK

*SD 09/03/06*

*(9)*

10.0

PG

PURCHASING



Comment: PURCHASING

Issue P/O: *8382*

LPI Per ASTM 1417 LEVEL 2

Certificate of conformaty is required

*CL 09/03/11*

*(9)*

11.0

PACKAGING 1

PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1

Receive & Inspect For Transit Damage

Ensure certificate of conformity is attached

*CL 9/3/11*

*(9)*

12.0

QC5

INSPECT WORK TO CURRENT STEP



Comment: INSPECT WORK TO CURRENT STEP

*09/03/12*

*(9)*

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

Date: Tuesday, 10/02/2009 11:09:15 AM

User: Julie Dawson

## Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: STUD

Job Number: 45671

Part Number: D36883

Job Number:



Seq. #:

Machine Or Operation:

Description :

13.0

PACKAGING 1

PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1

Identify and Stock

Location: \_\_\_\_\_

9/3/13

10x  
50

14.0

QC21

FINAL INSPECTION/W/O RELEASE



Comment: FINAL INSPECTION/W/O RELEASE

09/03/13

Job Completion



u 09.03.18

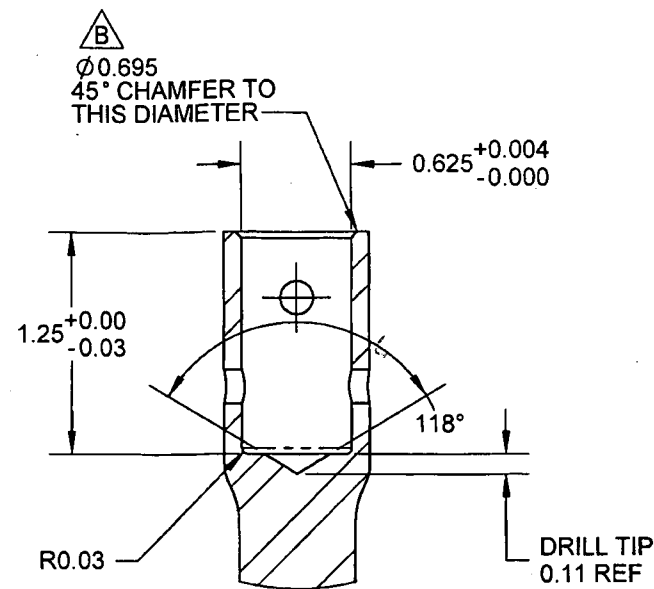
W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

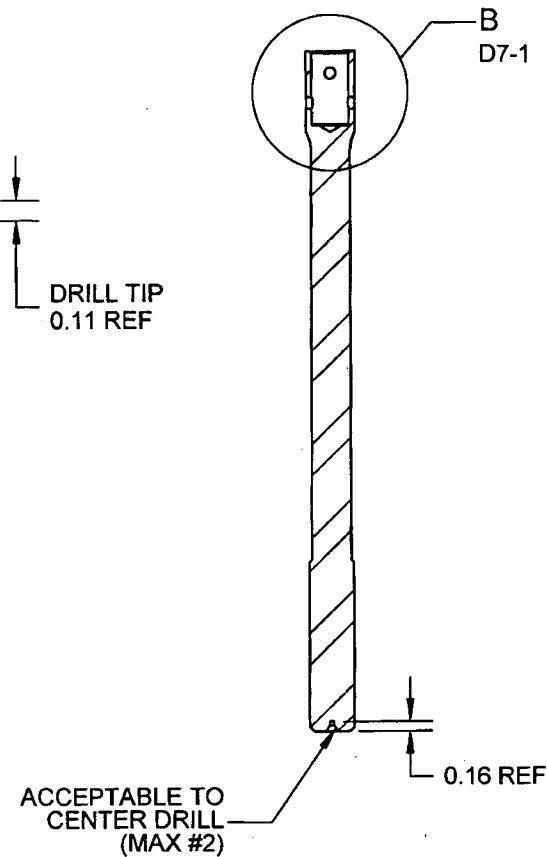
Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

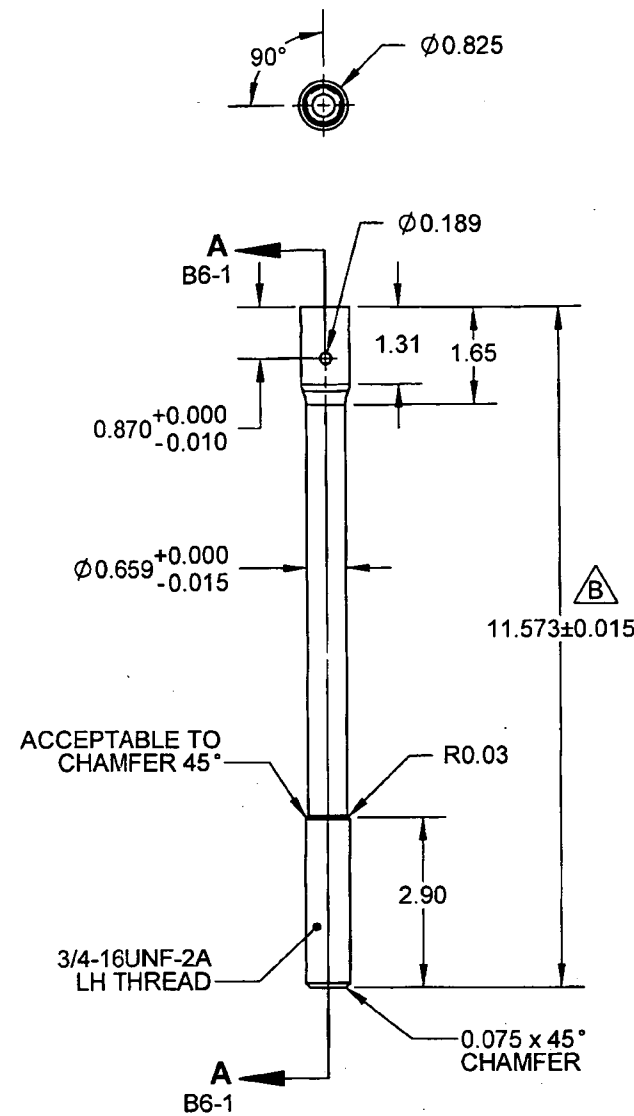
**NOTE:** Date & initial all entries



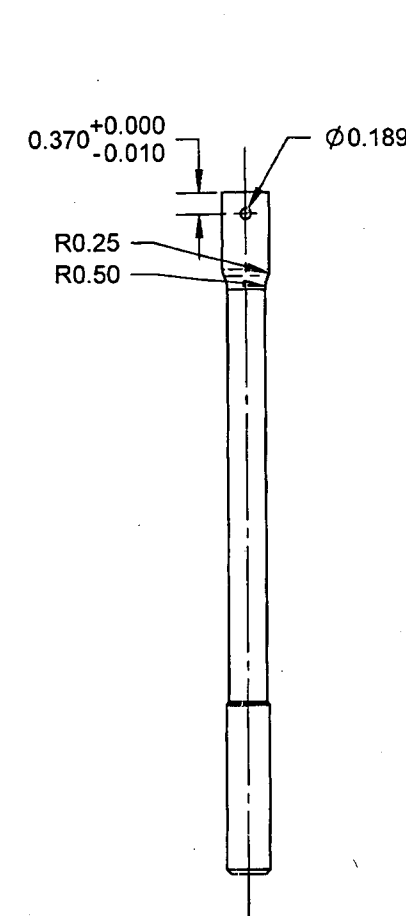
**DETAIL B**  
SCALE 3X  
D6-1



**SECTION A-A**  
D4-1



**D3688-1 STUD**

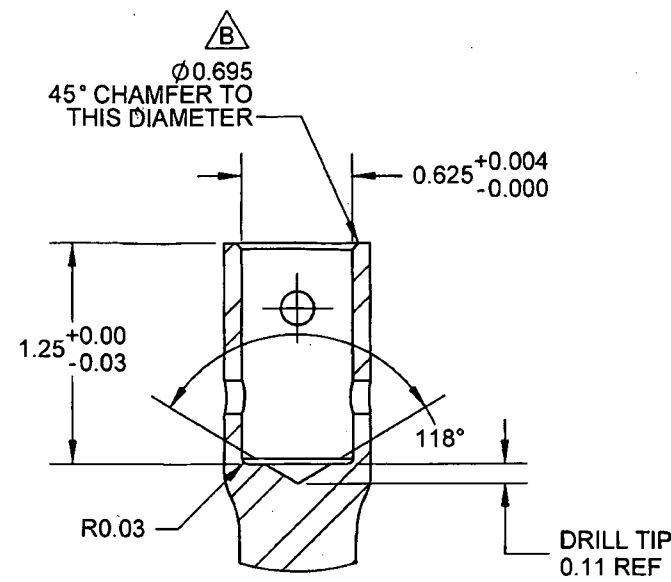


- NOTES:**
- 1) MATERIAL: 17-4PH STAINLESS STEEL ROUND BAR PER AMS 5643 H-900 CONDITION
  - 2) FINISH: NONE
  - 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
  - 4) UNITS: INCHES UNLESS OTHERWISE NOTED
  - 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
  - 6) IDENTIFICATION: NONE
  - 7) WEIGHT: 1.24 lb
  - 8) LPI PER ASTM 1417 LEVEL 2

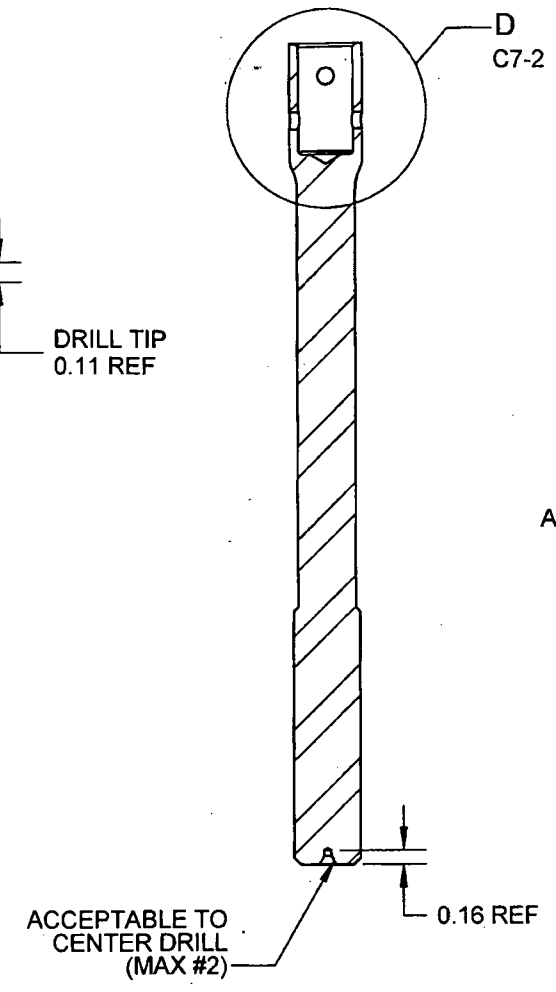
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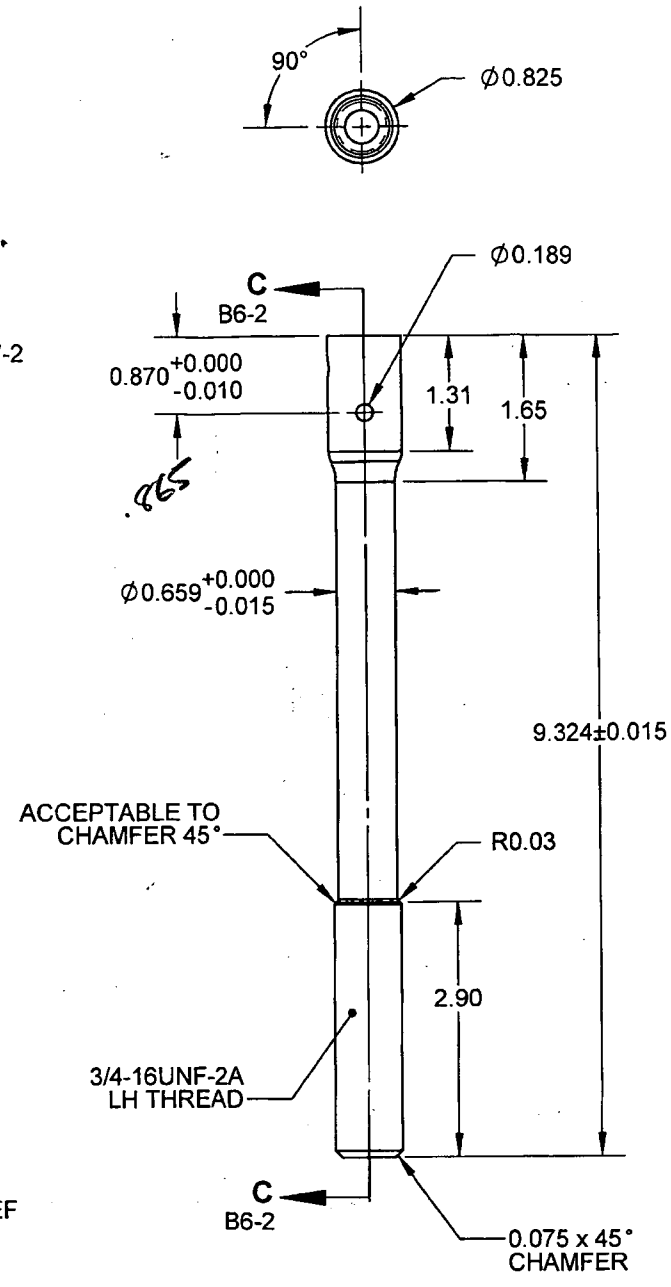
B	CHANGE TO 17-4PH H-900 (ZN A8-1, A8-2, A8-3, A4-4); REDUCE LENGTH ON D3688-1 FROM 12.073 TO 11.573 (ZN C3-1) BASED ON PROTOTYPE INSTALL; Ø0.695 WAS Ø0.665 (ZN D8-1, D8-2, D8-3); Ø0.508 WAS Ø0.478 (ZN D8- 4); REFORMATTED TO CURRENT DWG STANDARDS	RF	08.11.24
A	NEW ISSUE	RF	08.05.22
REV.	DESCRIPTION	BY	DATE
DESIGN	RF	<b>DART AEROSPACE LTD</b> HAWKESBURY, ONTARIO, CANADA	
DRAWN	RF		
CHECKED	RF	DRAWING NO.	REV. B
MFG. APPR.	RF	D3688	SHEET 1 OF 4
APPROVED	RF	TITLE	SCALE
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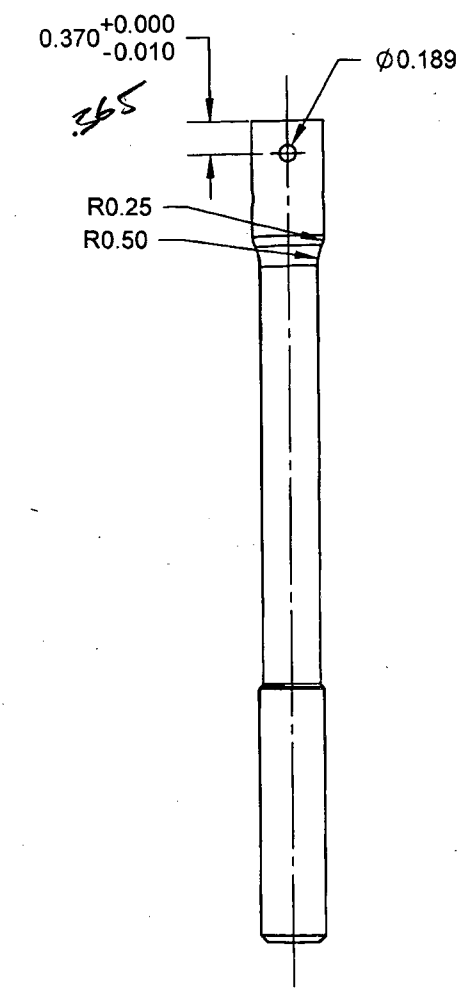
**DETAIL D**  
SCALE 2X  
D6-2



**SECTION C-C**  
D4-2



**D3688-3 STUD**



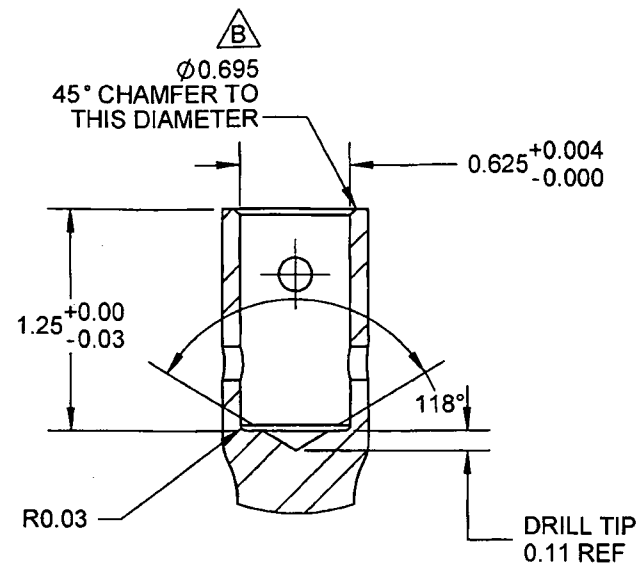
- NOTES:**
- 1) MATERIAL: 17-4PH STAINLESS STEEL ROUND BAR PER AMS 5643 H-900 CONDITION
  - 2) FINISH: NONE
  - 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
  - 4) UNITS: INCHES UNLESS OTHERWISE NOTED
  - 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
  - 6) IDENTIFICATION: NONE
  - 7) WEIGHT: 0.97 lb
  - 8) LPI PER ASTM 1417 LEVEL 2

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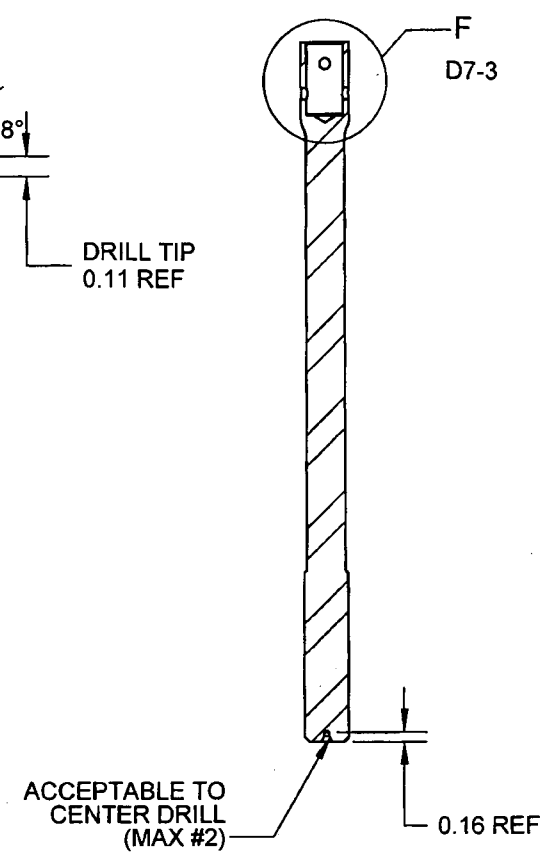
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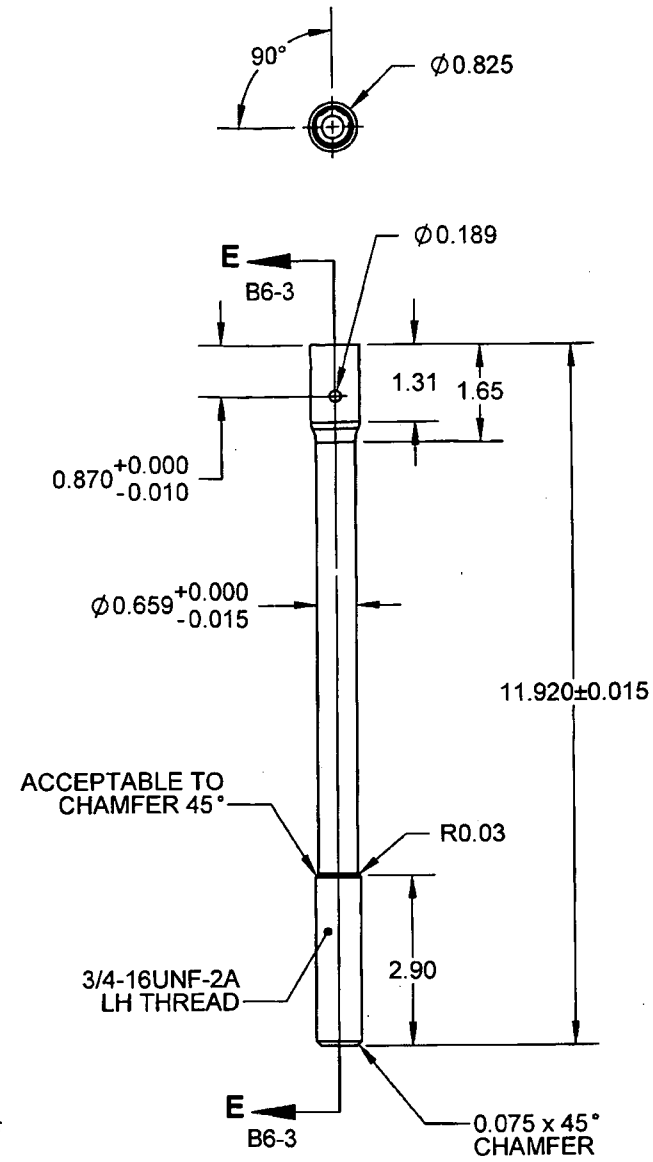




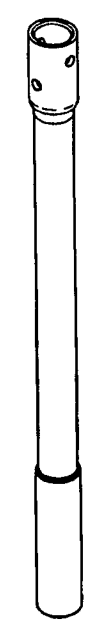
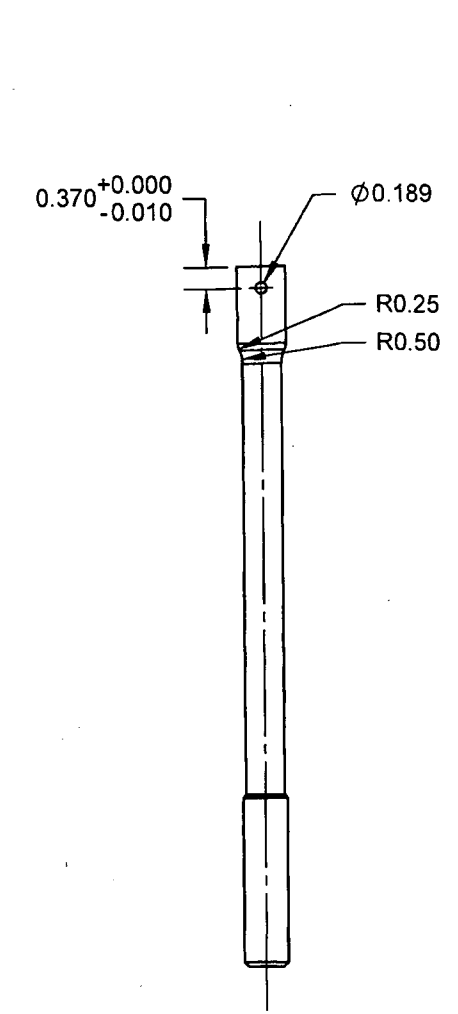
**DETAIL F**  
SCALE 3X  
D6-3



**SECTION E-E**  
D4-3



**D3688-5 STUD**

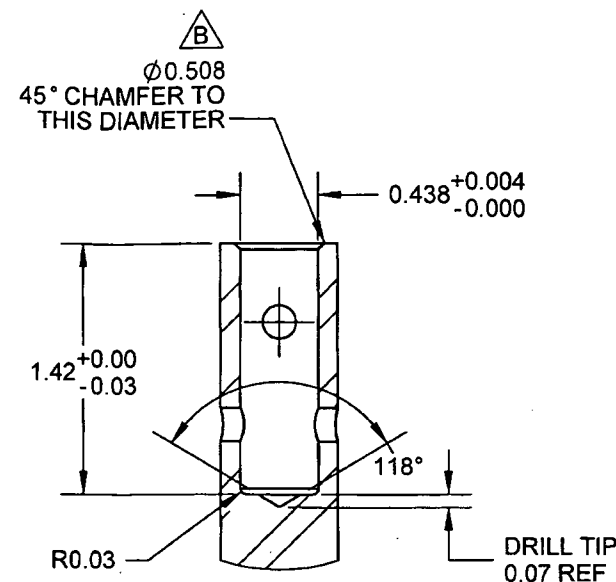


- NOTES:**
- 1) MATERIAL: 17-4PH STAINLESS STEEL ROUND BAR PER AMS 5643 H-900 CONDITION
  - 2) FINISH: NONE
  - 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
  - 4) UNITS: INCHES UNLESS OTHERWISE NOTED
  - 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
  - 6) IDENTIFICATION: NONE
  - 7) WEIGHT: 1.26 lb
  - 8) LPI PER ASTM 1417 LEVEL 2

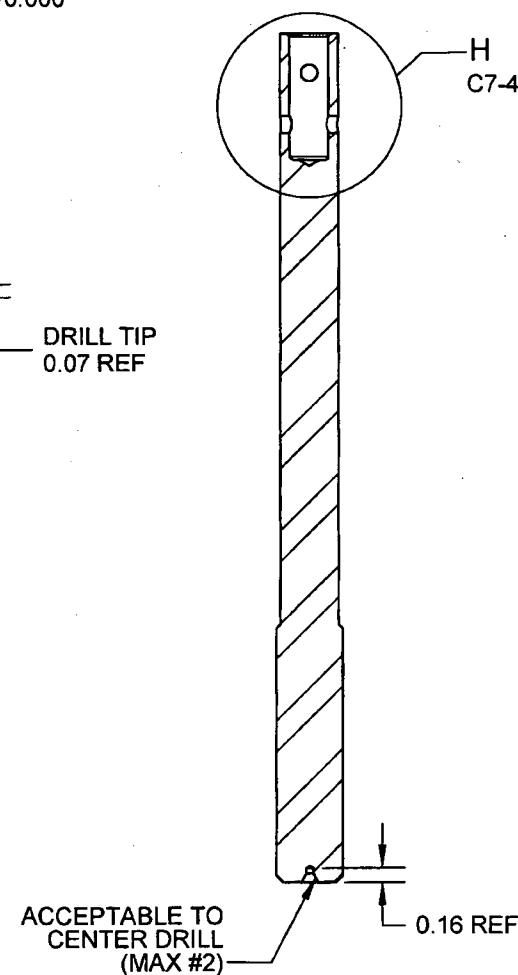
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MFG. APPR.	<i>GP</i>	<b>D3688</b>	SHEET 3 OF 4
APPROVED	<i>GP</i>	TITLE	SCALE
DE APPR.	<i>GP</i>	<b>STUD</b>	NTS
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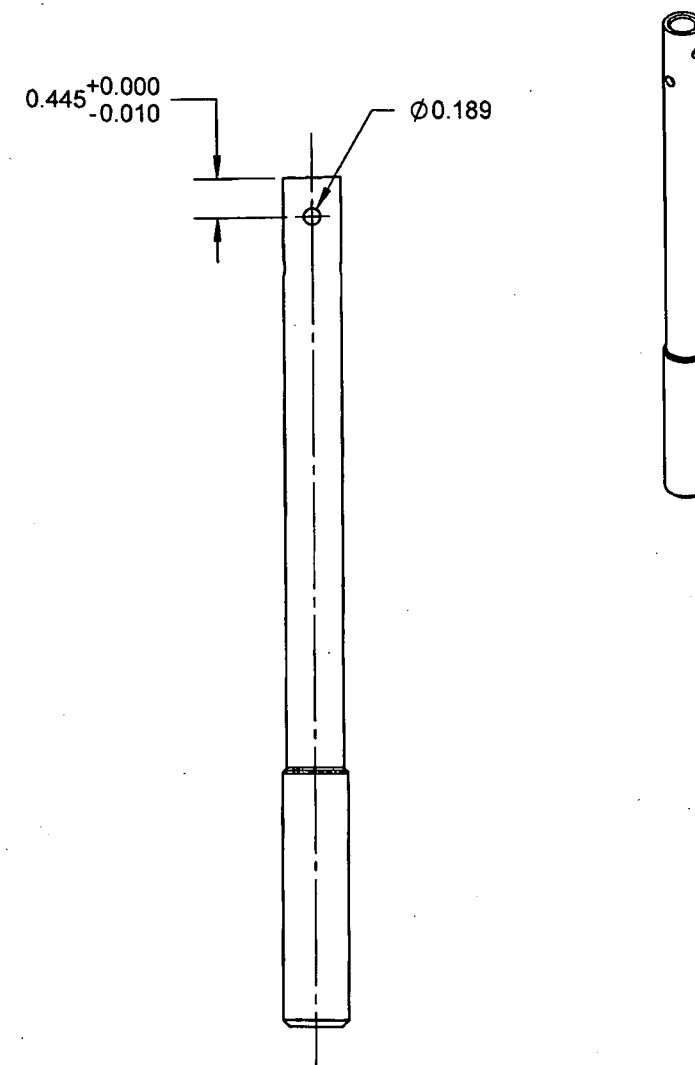
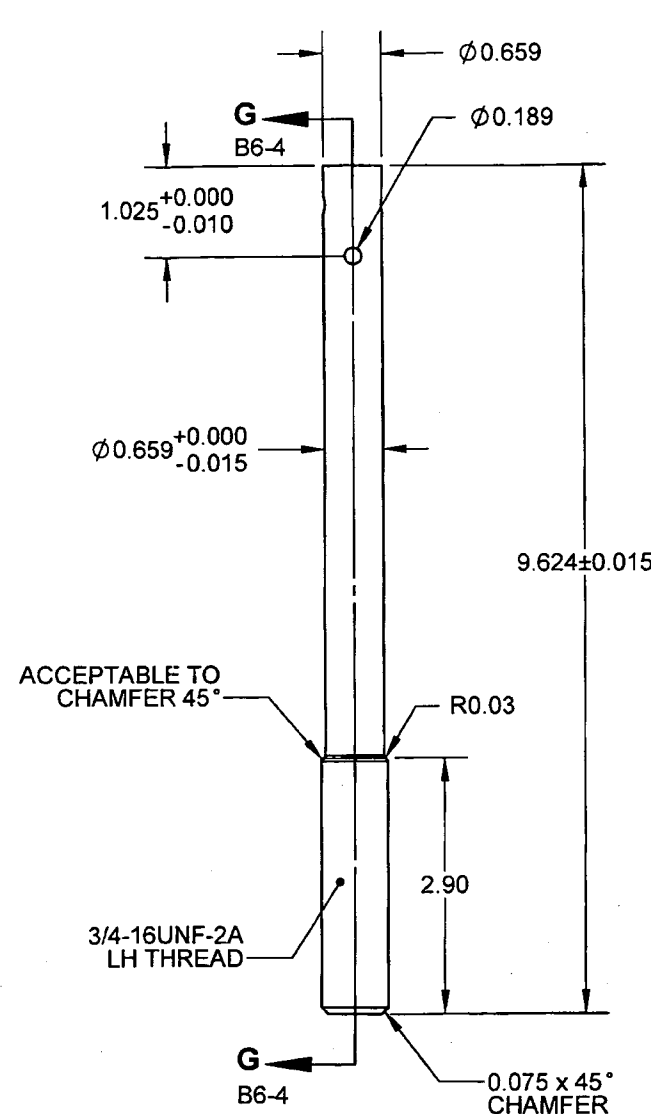


**DETAIL H**  
SCALE 2X  
D6-4



**SECTION G-G**  
D4-4

**D3688-7 STUD**



- NOTES:**
- 1) MATERIAL: 17-4PH STAINLESS STEEL ROUND BAR PER AMS 5643 H-900 CONDITION
  - 2) FINISH: NONE
  - 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
  - 4) UNITS: INCHES UNLESS OTHERWISE NOTED
  - 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
  - 6) IDENTIFICATION: NONE
  - 7) WEIGHT: 0.97 lb
  - 8) LPI PER ASTM 1417 LEVEL 2

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
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DRAWN	RF	HAWKESBURY, ONTARIO, CANADA	
CHECKED	92	DRAWING NO.	REV.
MFG. APPR.	41	D3688	SHEET 4 OF 4
APPROVED	11	TITLE	SCALE
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<b>DART AEROSPACE LTD</b>		<b>Work Order:</b> 45671
<b>Description:</b> STUD		<b>Part Number:</b> D3688-3
<b>Inspection Dwg:</b> D3688 <b>Rev:</b> B		<b>Page 1 of 1</b>

### FIRST ARTICLE INSPECTION CHECKLIST

☒ First Article ☐ Prototype

Drawing Dimension	Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
Ø.695x45°	±.010	Ø.695x45°	✓			
1.25	±.000 ±.030	1.220	✓			
.625	±.004 ±.000	.626	✓			
Ø.825	±.010	Ø.825	✓			
.870	±.000 ±.010	.863	✓			
Ø.659	±.000 ±.015	.650	✓			
Ø.189	±.004 ±.001	Ø.192	✓			
1.31	±.030	1.310	✓			
1.65	±.030	1.650	✓			
Ø9.324	±.015	9.332	✓			
Ø.75x45°	±.010	Ø.67x45°	✓			
.370	±.000 ±.010	.365	✓			
Ø.189	±.004 ±.001	Ø.192	✓			
R.25	±.030	R.250	✓			
R.50	±.030	R.500	✓			
3/4-16 UNF-2A	.7485 .7391	.743	✓			
M.D.W.	.7737 .7643	.7726	✓			

<b>Measured by:</b> 	<b>Audited by:</b> 	<b>Prototype Approval:</b>	N/A
<b>Date:</b> 09/03/05	<b>Date:</b> 09/03/06	<b>Date:</b>	N/A

Rev	Date	Change	Revised by	Approved
A		New Issue	KJ/JLM	





# LIQUID PENETRANT TEST REPORT

P- 14935

PAGE 1 OF 1

CLIENT DART AEROSPACE DATE MAR 11-2007 TIME AM ☒ PM ☐  
ATTENTION LINDA / CHANTAL ACUREN JOB NO. 188-09-004343  
ADDRESS 1270 ABOLDEEN ST POWO No. 8382  
HAWKESBURY, ON WORK LOCATION HAWKESBURY - SHOP  
KOA 1K7 ACCEPTANCE STD. ASTM 1417 REV./DATE 2007  
PROJECT F.P.I. ON 100% EX TERNAL  
ITEM(S) EXAMINED FIVE CROSS TUBES -  
39 MACHINED PARTS - MOTOR MOUNTING

JOB DESCRIPTION WET FLUORESCENT LIQUID PENETRANT INSPECTION  
PROCEDURE No. LT-XXXX REV./DATE \_\_\_\_\_ TECHNIQUE No. LT-XXXX-XXX REV./DATE \_\_\_\_\_  
PART No. \_\_\_\_\_ MATERIAL \_\_\_\_\_ THICKNESS \_\_\_\_\_  
SCOPE ON 39 STAINLESS STEEL PARTS, 5 ALUMINE ALUMINUM X-TUBES

TEST DETAILS  
METHOD ☒ FLUORESCENT ☐ VISIBLE ☒ WATER WASH ☐ SOLVENT REMOVABLE ☐ POST EMULSIFIED  
FAMILY BRAND MAGNA FLUX BLACK LIGHT S/N 1165 ☒ OUTPUT > 1000  $\mu$  W/CM<sup>2</sup> ☐ AMBIENT < 2 fc  
PENETRANT ZL 67 MINIMUM DWELL TIME 45 MIN. LIGHTING EQUIP. ☐ FLASHLIGHT ☐ TROUBLELIGHT ☐ OUTPUT > 100 fc @ SURFACE  
PENETRANT REMOVER H2O MINIMUM DRY TIME >10 MIN. OTHER LABINO  
DEVELOPER SKD 52 MINIMUM DWELL TIME 10 MIN. LIGHT METER S/N \_\_\_\_\_ CAL DUE DATE FEB 2010  
DEVELOPER TYPE ☒ NON AQUEOUS ☐ AQUEOUS ☐ DRY

TEST SURFACE  
SURFACE CONDITION ☐ AS GROUND ☐ AS WELDED ☐ MACHINED ☐ SHOT BLASTED ☐ CLEAN BARE METAL  
SURFACE TEMPERATURE ☐ < -4°C/ 20°F ☐ -4°C/ 20°F TO 10°C/ 50°F ☐ 10°C/ 50°F TO 52°C/ 125°F ☐ > 52°C/ 125°F

RESULTS- ( ☐ METRIC ☐ IMPERIAL )  
ACCEPT REJECT  
9 JB# 45671  
10 # 45670  
11 # 46051  
11 # 46054  
1 JB# 46094  
1 # 46092  
1 # 46093  
1 # 46371  
1 # 46372  
ALL ITEMS WERE FOUND ACCEPTABLE

Scope of Services  
The agreement of Acuren Group Inc. to perform services extends only to those services provided for in writing. Under no circumstances shall such services extend beyond the performance of the requested services. It is expressly understood that all descriptions, comments and expressions of opinion reflect the opinions or observations of Acuren Group Inc. based on information and assumptions supplied by the owner/operator and are not intended nor can they be construed as representations or warranties. Acuren Group Inc. is not assuming any responsibilities of the owner/operator and the owner/operator retains complete responsibility for the engineering, manufacture, repair and use decisions as a result of the data or other information provided by Acuren Group Inc. In no event shall Acuren Group Inc.'s liability in respect of the services referred to herein exceed the amount paid for such services.

Standard of Care  
In performing the services provided, Acuren Group Inc. uses the degree, care and skill ordinarily exercised under similar circumstances by others performing such services in the same or similar locality. No other warranty, expressed or implied, is made or intended by Acuren Group Inc.

## SIGNATURES

CLIENT REPRESENTATIVE Ian Titley DTR # E-19816  
TECHNICIAN (SIGNATURE): Mike J. H. Stow REPORT REVIEWED BY:  
NAME (PRINT): Mike J. H. Stow NAME INITIALS  
1<sup>ST</sup> TECHNICIAN 2<sup>ND</sup> TECHNICIAN  
CGSB LEVEL 4 SNT LEVEL \_\_\_\_\_ CGSB LEVEL \_\_\_\_\_ SNT LEVEL \_\_\_\_\_  
CGSB REG. No. \_\_\_\_\_ CGSB REG. No. \_\_\_\_\_

# Receiving Report

Date: 8/12/10  
 Supplier: MACWP

Batch No: M110213  
 Dart P/O: 7720

Packing Slip: Yes ☒ No ☐  
 Invoice: Yes ☐ No ☒  
 Receipt: Cash ☐ Cr ☒

Release Note Attached: Yes ☒ No ☐ N/A ☐  
 Waybill Attached: Yes ☐ No ☒  
 Shipment Complete: Yes ☐ No ☒ N/A ☐  
 QC6 Inspection 8081214 N/A ☒  
 Work Order ☐ N/A ☒

## Discrepancies

Part Number	Description	Quantity Ordered	Quantity Received	Quantity Returned	Quantity Short	Comments
M304B	Bar 500x2500	12	0	0	12	

Initials of receiver (if shipment OK) Level 12

Production/Admin:

Date

Received/Costing

Initial

0811211  
RCR9717  
CR

Location

# Magna Stainless

5775 Kieran St, Saint-Laurent, QC H4S 0A3  
Phone: (514) 631-1211 Watts: 1-800-363-6646 Fax: (514) 631-0013

## SALES ORDER

Pg 2 of 2

W004647

SHIP TO:

DART AEROSPACE LTD  
1270 ABERDEEN STREET

SHIP TO:

DART AEROSPACE LTD  
1270 ABERDEEN STREET

HAWKESBURY , ON  
K6A 1K7

HAWKESBURY , ON  
K6A 1K7

SPECIAL INSTRUCTIONS

Currency	Sales Person	Terms	Contact	Doc Date
CANADIAN DOLLARS	ERYCK BLAIS	NET 30 DAYS	CHANTAL	12/02/08
Customer PO	Warehouse	Phone	Fax	MTR
7720	MAGNA STAINLESS INC.	(613) 632-5200	(613) 632-1053	Y
				Req Date
				12/05/08

LN	Quantity	Product Description	Pricing Quantity	Price	Value
	1 PC	STAINLESS HEXAGONS			
	1 PC	SHX 303 CD 1" x 12'	1 PC	225.00 PC	225.00
	1 PC	SHX 303 CD 1-1/8" x 12'	1 PC	295.00 PC	295.00
	1 PC	STAINLESS ROUNDS			
	1 PC	SRB 303 5/8" x 12'	1 PC	39.00 PC	39.00
	1 PC	SRB 17-4 ST 1" x 12'	1 PC	130.00 PC	130.00
		MUST HT: G14736			
		Total Weight: 671 LB			
		12/02/08 09:09:54			
				Invent Value:	1,977.00
				Taxed Cost:	
				Non-tax Cost:	
				TAX 1GST	98.85
				Tax 2:	
				Total Value:	2,075.85

Subject to prior sale. Prices are based on full list quoted. Partial order may effect numbers. Offering random lengths unless shown otherwise. Quote valid for 30 days from date of quote.



# Certificate of Test

\*\*\*\*\*  
\* CERTIFICATION \*  
\*\*\*\*\*

67236

HEAT G14736 ORDER 0502028/016 SON 77709A BOL 0151678 TAG 2009439 09/29/08

SHIP TO:  
ASA ALLOYS  
81 STEINWAY BLVD  
CUSTOMER PICKUP  
ETOBICOKE

ON M9W 6

*S/L*  
*6/12/11*

----- YOUR ORDER & DATE -----  
071688-CH 9/29/08 CUST# ASAALL01 CUST TAG#

----- ITEM DESCRIPTION -----  
GRADE 17-4  
Size 17-4 CFA RND BAR 1 STD Country of Melt: USA  
Ship Condition A Country of Mfg.: USA  
NAFTA Country of Origin is Country of Melt

Total Bundles 2 SON Weight 4300

----- SPECIFICATIONS -----  
THE PRODUCTS LISTED ON THIS MILL TEST REPORT SATISFY PREFERENCE CRITERION B  
AS DEFINED IN ARTICLE 401 OF THE NORTH AMERICAN FREE TRADE AGREEMENT.  
AMS 5643R ASME SA564 E07  
ASTM A484 06B ASTM A564 04 TYPE 630  
DIN 50049/EN 10204 3.1B UNS S17400, AISI 630  
NO WELD REPAIR FREE OF MERCURY CONTAMINATION  
DFARS 252.225.7014 6/05 BS EN 10204 TYPE 3.1  
REDUCTION RATIO GREATER THAN 6:1

----- MECHANICAL & OTHER TESTS -----  
Test Condition H900  
Hardness as shipped 319 HBW Hardness as tested 409 HBW  
Hardness as shipped ( 34 HRC ) Hardness as tested ( 44 HRC )  
Grain size 6.0 Tensile strength, KSI (MPa) 207.0 (1427)  
Micro OK 0.2% Yield Strngth, KSI (MPa) 182.3 (1257)  
Intergranular corrosion OK  
Macro OK Elongation % in 4D 12.5  
Reduction of area % 40.0  
Ferrite .0 Hardenability 44 HRC

----- CHEMICAL COMPOSITION -----  
Carbon (C) .029 Manganese (Mn) .850  
Phosphorus (P) .020 Sulphur (S) .027  
Silicon (Si) .380 Chromium (Cr) 15.260  
Nickel (Ni) 4.290 Cobalt (Co) .050  
Copper (Cu) 3.740 Moly (Mo) .040  
Nitrogen (N) .028 Columbium (Cb) .260  
Titanium (Ti) .010 Aluminum (Al) .010  
Tin (Sn) .027 Boron (B) .001  
Tantalum (Ta) .010 Vanadium (V) .070  
Columbium/  
Tantalum (Cb+Ta) .270  
Iron (Fe) Balance  
Frequency .000 Severity .000  
Melt Practice EAF  
Refining Practice AOD  
De-long Ferrite

Knowingly & willfully falsifying or concealing a material act on this form,  
or making false, fictitious or fraudulent statements or representations  
herein could constitute a felony punishable under federal statutes.

We hereby certify that the test results shown in this report are correct and  
accurate as contained in the records of the company and are in compliance  
with the specifications, codes, and standards listed above.

M.F. Marcano, Quality Manager

*M.F. Marcano*